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# A NEW SPECIES OF COPEPOD OF THE GENUS CORYCAEUS FROM THE NORTH AMERICAN COAST

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Plankton collections from two coastal areas of North America, sent to the United States National Museum for identification, have been found to contain an unknown species of the cyclopoid copepod genus *Corycaeus*. These collections were recently made at Beaufort Inlet, North Carolina, by William H. Sutcliffe, Jr., and in the Gulf of Mexico by Joel W. Hedgpeth. In addition, examination of a single female from the Chesapeake Bay area, reported by C. B. Wilson (1932) as *Corycaeus lubbockii* Giesbrecht, shows that it also is referable to this species.

## Family CORYCAEIDAE

### Genus CORYCAEUS Dana

#### CORYCAEUS (DITRICHOCORYCAEUS) AMERICANUS, new species

Plate 18

*Corycaeus lubbockii*, C. B. Wilson, 1932, p. 42.

*Specimens examined.*—1 female, 8 males, collected in plankton tow just inside Beaufort Inlet, N. C., at high tide, June 20, 1947, by William H. Sutcliffe, Jr. Occurring with *Corycaeus* (*Ditrichocorycaeus*) *amazonicus* F. Dahl.

4 females, 4 males, collected in plankton tow, Point Aransas, Tex., April 18, 1946; 1 female, near shore, Texas coast, Gulf of Mexico, April 20, 1947, by Joel W. Hedgpeth. Also occurring with *C. amazonicus*.

1 female, U. S. N. M. No. 58530, collected at the 100-fathom line, outside Chesapeake Bay, August 21, 1920.

*Types.*—Holotype female, U. S. N. M. No. 85980; allotype male, No. 85979; locality, Beaufort Inlet, N. C.

*Diagnosis.*—Possessing these characters of the subgenus *Ditrichocorycaeus* M. Dahl: Constituent of coastal plankton; small size; rounded ventral process; leg 4 with its endopod bearing 2 setae, and its second basal segment with a small protuberance inside; spine of basal segment of second antenna of female three times longer than that of the second segment, only slightly longer in the male. Distinguished by: Well-defined fourth thoracic segment; both sexes having the genital segment approximately twice the length of the anal, with the caudal rami divergent and longer than the abdomen in the female, about three-fourths of its length in the male; genital segment of female inflated dorsally, that of both sexes with a medial ventral hook; exopod of leg 4 having long spines on segments 1 and 3.

*Description.*—Female (pl. 18, figs. 1, 2): Total length about 1.10–1.18 mm. Eyes small. Metasome composing 70 percent of the total length of the body. Cephalic segment more or less distinctly separated from thorax, equaling almost half of the total length of the metasome. First thoracic segment overlying the second a considerable amount; the latter with a lateral hyaline flange ending in a pointed tip. Wing of third segment broad, acutely pointed, reaching just beyond the middle of the genital segment in dorsal view, inside margin with a spinous point near the middle. Fourth thoracic segment entirely demarcated from third, wing with a rather large spinous tip. Fifth segment hardly visible dorsally.

Urosome composing 30 percent of total length of body. Genital segment about twice the length of the anal, caudal rami longer than both segments combined; proportional length of segments, lateral view, ventral side: approximately 22:11:44. Genital segment (pl. 18, fig. 4) considerably inflated dorsally; distal margin with a fringe of small spinules ventrally; medial ventral hook small; genital opening with a long plumose seta, reaching just beyond the end of the anal segment. Caudal rami considerably divergent; with a lateral seta distally and a terminal row of spinules; caudal setae 3 (pl. 18, fig. 3), none as long as the ramus, the shortest spiniform, toothed on one margin; the others slender setae, of which the inner is the longer.

First antenna having the first two segments broad, the others slenderer; the fourth segment the longest, the terminal the shortest. Segment 1 with two short setae. Second segment with eight setae, two of which are as long as the segment is wide, and four of which reach to the apex of the appendage. Segment 3 with two stalked setae reaching beyond the terminus of the appendage. Fourth seg-

ment with one long stalked seta and a pedicel bearing two short ones. Fifth segment with a long seta distad on each side, that of the outer side accompanied by a much shorter one. Terminal segment with one short lateral, two long subterminal, and two long terminal setae.

Second antenna (pl. 18, fig. 7) having the basal segment about half the length of the second, its spine about one-fifth longer than the second segment, minutely serrate. The second segment half as wide as long; with a small lobe at its inside basal margin; its spine on a short pedicel, also minutely serrate on inner margin; inflated lamella-like inner portion with a stout, outer spinous process and a more rounded projection inside. Seta like processes of third segment obliquely truncated at ends, each bearing a minute hair subterminally; accessory claw stout, but not reaching to end of segment, three-fifths of the length of the terminal claw, a very small spinous process at its base. Terminal claw only slightly shorter than the spine of second segment, and a little shorter than the third segment.

Terminal inside spines of exopods of legs 1–3 comparatively straight; that of leg 1 set at a very slight angle and having two foliate structures between it and the shorter outside spine; setae shorter than the terminal inside spine. Terminal spine of exopod of second leg (pl. 18, fig. 6) hardly curved, inside margin with long, fine hairs; serrate outer flange not reaching to distal end and not continued across the spine to inner edge; terminal seta a little longer than the spine. Terminal spine of exopod of third leg very straight, longer than the third segment, proportions of spine to segment about 11:8; inside setae reaching a little beyond the spine.

Leg 4 (pl. 18, fig. 5) with the exopod approximately as long as the second basipod segment is wide. Top of second basal segment with a small central hump, set marginally with fine hairs; inside protuberance a comparatively large, well-rounded lobe. Segment 1 of exopod very narrow and long, about three-fourths as long as segments 2 and 3 combined; proportional lengths of segments, outer edge: approximately 27:15:20. Spines of segments 1 and 3 long, nearly equal to one another, that of segment 1 reaching at least to the distal end of the second segment. The five inner setae of the third segment all laterally placed, the sixth much broader at the base, in a terminal position, the apex and seta indistinctly demarcated from the rest of the segment (pl. 18, fig. 5, *a*). (The figures of M. Dahl, 1912, show variation from this usual pattern in a few species of *Ditrichocorycaeus*.)

Male (pl. 18, figs. 12, 13): Total length 0.93 to 1.0 mm., Proportions of metasome to urosome approximately 73:27. Division of cephalic and first thoracic segments more or less discernible. First

thoracic segment overlying second as in female. Second thoracic segment with the lateral hyaline flange having larger tips than in the female. Wing of third segment reaching to about the middle of the genital segment, inside margin rounded at the center, without a spinous point as in the female; fourth segment separated dorsally, the distal processes usually extending a little beyond the basis of the abdomen, tipped with short spines. Fifth segment somewhat visible dorsally. Eyes larger than those of female.

Urosome very slender; proportions of genital and anal segments 2 to 1 as in female, but segments relatively longer and the caudal rami relatively shorter; approximate proportions, lateral view, ventral side: 26:13:30. Ventral hook of genital segment large (pl. 18, fig. 11); lobed genital flaps with two rows of fine hairs on the surface, the seta long, nonplumose, accompanied inside by a stout median spine and a short process with a broadened base (pl. 18, fig. 10). Caudal rami about three-fourths the length of the abdomen, with a short lateral seta distally; terminal setae 3 (pl. 18, fig. 14), the inner the longest, stout and spiniform, equaling the ramus in length and adding to the superficial appearance of great length of the urosome; the outer also spiniform, about one-fourth as long as the inner; the third slightly longer, slender and sinuous, placed subterminally near the dorsal inner edge.

Second antenna (pl. 18, fig. 8) with the basal segment about half the length of the second; its spine finely serrate and about as long as the second segment. Lamina on inner margin of second segment with a stout outer spinous process, the central portion of the lamina very thin, but produced into a second spinous projection; surface of segment near middle with a row of minute teeth, hardly visible except at high magnification; spine with stout barbules which are most thickly set in the central portion. Third segment with the basal process very slender, its tip divided, reaching about to the end of the segment. Accessory claw stout basally, otherwise very slender, reaching by almost half its own length beyond the base of the terminal claw; its tip also divided; a secondary spine, with a 3-pronged apex, at its base. Terminal claw stout, blunt ended, slightly exceeding in length the two basal segments combined.

Exopod of first leg (pl. 18, fig. 9) having the distal part of the terminal inside spine a little recurved, but the whole directed inward, the apex of the segment being incised centrally for a short distance, the resulting two portions having each a hyaline, foliate structure inside; this whole condition suggested in the female, but much more strongly developed in the male. The hyaline flanges of the outer margin of the segment minutely serrate; that of the distal portion rather short due to the excessive development of the distal

spinous process. Setae short, not reaching to the distal end of the terminal inside spine.

Leg 4 like that of the female, except that the inside protuberance of the second basal segment is not quite so large, the outer margin lacks the setose hump, and the first exopod segment is wider, with its spine reaching a little beyond the distal end of the second segment.

*Remarks.*—This species occurred in the Beaufort and Gulf of Mexico collections with *Corycaeus amazonicus* F. Dahl. The two are apparently the chief representatives of the subgenus *Ditrichocorycaeus* on the American Atlantic coast. *C. amazonicus* was originally described from near the mouth of the Amazon River, and M. Dahl (1912) has reported it farther south along the Brazilian coast and from the coastal waters of the Tortugas and Bermuda Islands. *Corycaeus lubbockii* Giesbrecht, with which C. B. Wilson confused *C. americanus*, has been shown by M. Dahl (1912) and Gurney (1927) to be an Indo-Pacific form of the subgenus.

*C. amazonicus* and *C. americanus* are similar in size and in certain distinguishing characters of the appendages. They are the only species of the subgenus having the terminal portion of the exopod of the male first leg incised, and the inside spine thus set somewhat at an angle; this is most pronounced in *amazonicus*. Likewise, they alone have the spines of the first and third segments of the exopod of the fourth leg so elongate. In the male of *C. amazonicus*, this condition is apparently somewhat variable, some specimens examined having the spine of the first segment reaching well beyond the middle of the third segment. The arrangement of the setae of the third segment of the fourth leg is also similar in the two species, but they differ in having the protuberance of the second basal segment scarcely developed in *C. amazonicus*, and in the relative proportions of the segments of the exopod—in *C. amazonicus* the second and third segments are subequal.

Both females of the two species have the genital segment inflated dorsally but are easily distinguished from one another by the relative proportions of the abdominal segments and caudal rami. The genital and anal segments of *C. amazonicus* are approximately equal (the anal only a little longer in lateral view), and the caudal rami are only slightly longer than the anal segment. In addition, the wings of the third thoracic segment are exceptionally long, reaching to the distal end of the genital segment. In the male of *C. amazonicus*, the anal segment is about two-thirds the length of the genital, and the caudal rami are slightly longer than the anal segment.

The proportions of the two segments of the abdomen of *Corycaeus americanus* approach most closely those of the females of *C. africanus* F. Dahl and *C. farrani* Fruchtl. Both of these species are also dis-

tinguished by having long caudal rami; in each instance, however, they do not attain the length of the abdomen. *Corycaeus americanus* differs not only from these species, but from all other species of the subgenus known to me, in having the caudal rami of the female longer than the two abdominal segments combined.

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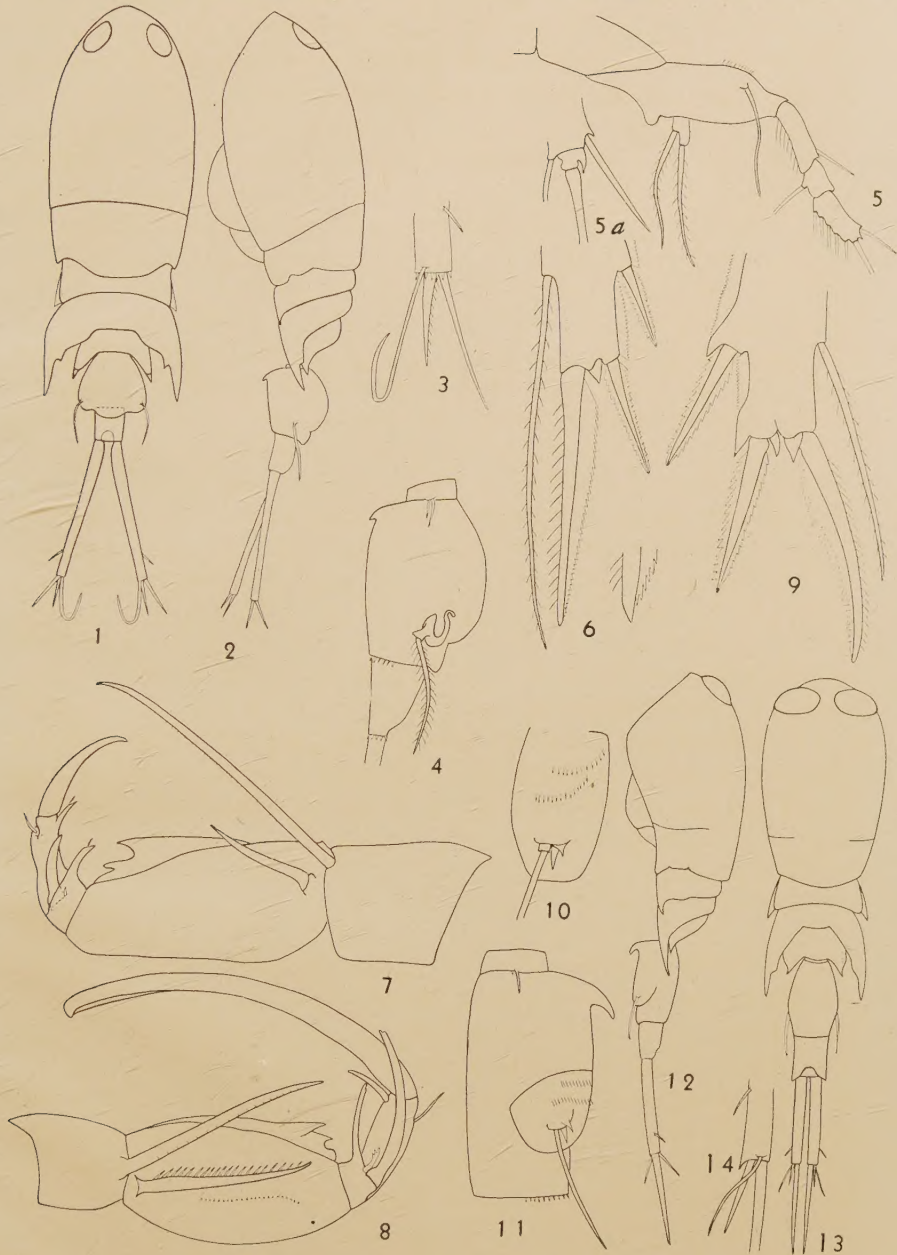


*Corycaeus americanus*, new species. FEMALE: 1, Dorsal view; 2, lateral view; 3, terminal portion of caudal ramus, dorsal view; 4, detail of abdomen and fifth thoracic segment with leg 5, lateral view; 5, leg 4; 5a, detail (oil immersion) of terminal portion of exopod 3, leg 4; 6, leg 2, terminal portion of exopod 3, with detail (oil immersion) of apex of inner terminal spine; 7, second antenna (oil immersion). MALE: 8, Second antenna (oil immersion); 9, leg 1, terminal portion of exopod 3; 10, genital flap, ventral view (oil immersion); 11, genital segment and fifth thoracic segment with leg 5, lateral view; 12, lateral view; 13, dorsal view; 14, terminal portion of caudal ramus, dorsal view.

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